What is claimed is:

1. A cardiac assist system, comprising:

a primary device housing; and

said primary device housing having a control circuit therein;

a lead system to transmit and receive signals between a desired anatomical cardiac tissue region and said primary device housing;

said lead system including a sensing and stimulation system at an epicardial-lead interface with the desired anatomical cardiac tissue region;.

said sensing and stimulation system including optical sensing components to detect physiological signals from the desired anatomical cardiac tissue region and electrical sensing components to detect physiological signals from the desired anatomical cardiac tissue region.

2. The cardiac assist system as claimed in claim 1, wherein said sensing and stimulation system includes optical pulsing components to deliver a stimulus of a predetermined duration and power to the desired anatomical cardiac tissue region.

3. The cardiac assist system as claimed in claim 1, wherein said sensing and stimulation system includes electrical pulsing components to deliver a stimulus of a predetermined duration and power to the desired anatomical cardiac tissue region.

4. The cardiac assist system as claimed in claim 2, wherein said sensing and stimulation system includes electrical pulsing components to deliver a stimulus of a predetermined duration and power to the desired anatomical cardiac tissue region.

5. The cardiac assist system as claimed in claim 1, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

6. The cardiac assist system as claimed in claim 1, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

7. The cardiac assist system as claimed in claim 1, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

8. The cardiac assist system as claimed in claim 1, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

9. The cardiac assist system as claimed in claim 2, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

10. The cardiac assist system as claimed in claim 2, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

11. The cardiac assist system as claimed in claim 2, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

12. The cardiac assist system as claimed in claim 2, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

13. The cardiac assist system as claimed in claim 3, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

14. The cardiac assist system as claimed in claim 3, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

15. The cardiac assist system as claimed in claim 3, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

16. The cardiac assist system as claimed in claim 3, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

17. The cardiac assist system as claimed in claim 4, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

18. The cardiac assist system as claimed in claim 4, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

19. The cardiac assist system as claimed in claim 4, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

20. The cardiac assist system as claimed in claim 4, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

21. The cardiac assist system as claimed in claim 1, wherein said primary device housing further includes an electronic signal generator and a controlled laser light pulse generator linked to said electronic signal generator and said lead system is a fiber optic lead system;

said fiber optic based lead system including a fiber optic light pipe for receiving the laser light pulse from said controlled laser light pulse generator at a proximal end of said fiber optic light pipe,

said sensing and stimulation system including a photodiode, coupled to a distal end of said fiber optic light pipe, to convert the laser light pulse back into an electrical pulse and electrically driven cardiac electrodes coupled to said photodiode and the desired anatomical cardiac tissue region.

22. The cardiac assist system as claimed in claim 1, wherein said lead system comprises a photonic cable; and

said sensing and stimulation system including a light source and a light detector, said light source and said light detector forming the optical sensing component to detect physiological signals from the desired anatomical cardiac tissue region;

said photonic cable receiving signals from the desired anatomical cardiac tissue region and delivering signals to the desired anatomical cardiac tissue region.

23. The cardiac assist system as claimed in claim 22, wherein said light source illuminates the desired anatomical cardiac tissue region and said light detector detects properties of the desired anatomical cardiac tissue region by measuring the output of the light signals reflective from the desired anatomical cardiac tissue region.

24. The cardiac assist system as claimed in claim 23, wherein said light source is a light emitting diode and said light detector is a photodiode comprising multiple channels.

25. The cardiac assist system as claimed in claim 24, wherein said multiple channels detect light emission at multiple wavelengths.

26. The cardiac assist system as claimed in claim 22, wherein the optical sensing component includes a pressure-optical transducer.

27. The cardiac assist system as claimed in claim 22, wherein the optical sensing component includes a reflective element mechanically driven by a moving part of the desired anatomical cardiac tissue region.

28. The cardiac assist system as claimed in claim 1, wherein said sensing and stimulation system includes hydrostatic pressure sensing components to detect physiological signals from the desired anatomical cardiac tissue region.

29. The cardiac assist system as claimed in claim 1, wherein said sensing and stimulation system includes an electrode having an anti-antenna geometrical shape, said anti-antenna geometrical shape preventing said electrode from picking up and conducting stray electromagnetic interference.

30. A tissue invasive device, comprising:

a primary device housing; and

said primary device housing having a control circuit therein;

a lead system to transmit and receive signals between a selected tissue region and said primary device housing;

said lead system including a sensing and stimulation system at an interface with the selected tissue region;.

said sensing and stimulation system including optical sensing components to detect physiological signals from the selected tissue region and electrical sensing components to detect physiological signals from the selected tissue region.

31. The tissue invasive device as claimed in claim 30, wherein said sensing and stimulation system includes optical pulsing components to deliver a stimulus of a predetermined duration and power to the selected tissue region.

32. The tissue invasive device as claimed in claim 30, wherein said sensing and stimulation system includes electrical pulsing components to deliver a stimulus of a predetermined duration and power to the selected tissue region.

33. The tissue invasive device as claimed in claim 31, wherein said sensing and stimulation system includes electrical pulsing components to deliver a stimulus of a predetermined duration and power to the selected tissue region.

34. The tissue invasive device as claimed in claim 30, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

35. The tissue invasive device as claimed in claim 30, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

36. The tissue invasive device as claimed in claim 30, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

37. The tissue invasive device as claimed in claim 30, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

38. The tissue invasive device as claimed in claim 31, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

39. The tissue invasive device as claimed in claim 31, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

40. The tissue invasive device as claimed in claim 31, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

41. The tissue invasive device as claimed in claim 31, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

42. The tissue invasive device as claimed in claim 32, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

43. The tissue invasive device as claimed in claim 32, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

44. The tissue invasive device as claimed in claim 32, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

45. The tissue invasive device as claimed in claim 32, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

46. The tissue invasive device as claimed in claim 33, wherein said optical sensing components detect physiological signals by measuring a displacement of a mirror.

47. The tissue invasive device as claimed in claim 33, wherein said optical sensing components detect physiological signals by measuring a change in a refractive index of a section of cladding.

48. The tissue invasive device as claimed in claim 33, wherein said optical sensing component is an optical strain gauge to detect physiological signals.

49. The tissue invasive device as claimed in claim 33, wherein said optical sensing component is an optical-pressure sensor to detect physiological signals.

50. The tissue invasive device as claimed in claim 30, wherein said primary device housing further includes an electronic signal generator and a controlled laser light pulse generator linked to said electronic signal generator and said lead system is a fiber optic lead system;

said fiber optic based lead system including a fiber optic light pipe for receiving the laser light pulse from said controlled laser light pulse generator at a proximal end of said fiber optic light pipe,

said sensing and stimulation system including a photodiode, coupled to a distal end of said fiber optic light pipe, to convert the laser light pulse

back into an electrical pulse and electrically driven cardiac electrodes coupled to said photodiode and the selected tissue region.

51. The tissue invasive device as claimed in claim 30, wherein said lead system comprises a photonic cable; and

said sensing and stimulation system including a light source and a light detector, said light source and said light detector forming the optical sensing component to detect physiological signals from the selected tissue region;

said photonic cable receiving signals from the selected tissue region and delivering signals to the selected tissue region.

52. The tissue invasive device as claimed in claim 51, wherein said light source illuminates the selected tissue region and said light detector detects properties of the selected tissue region by measuring the output of the light signals reflective from the selected tissue region.

53. The tissue invasive device as claimed in claim 52, wherein said light source is a light emitting diode and said light detector is a photodiode comprising multiple channels.

54. The tissue invasive device as claimed in claim 53, wherein said multiple channels detect light emission at multiple wavelengths.

55. The tissue invasive device as claimed in claim 51, wherein the optical sensing component includes a pressure-optical transducer.

56. The tissue invasive device as claimed in claim 51, wherein the optical sensing component includes a reflective element mechanically driven by a moving part of the selected tissue region.

57. The tissue invasive device as claimed in claim 30, wherein said sensing and stimulation system includes hydrostatic pressure sensing components to detect physiological signals from the selected tissue region.

58. The tissue invasive device as claimed in claim 30, wherein said sensing and stimulation system includes an electrode having an anti-antenna geometrical shape, said anti-antenna geometrical shape preventing said electrode from picking up and conducting stray electromagnetic interference.